

Technology Climatology

for Information Systems
at GSFC
November 2005



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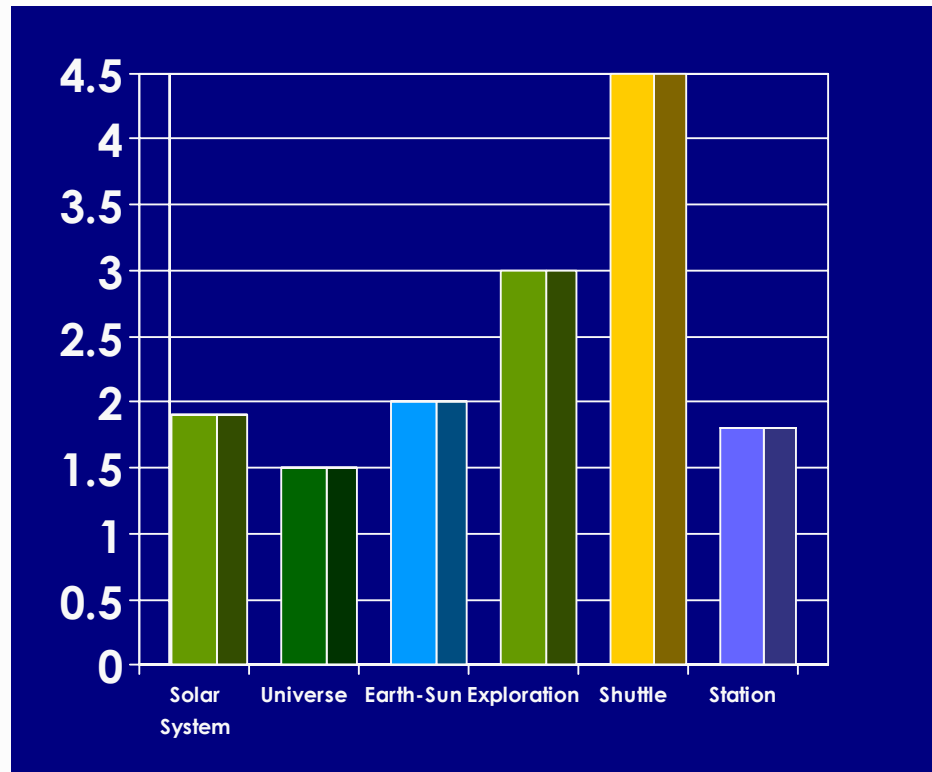
Technology Climatology

- The climate at NASA goes through a significant shift every 4 years, as well as ongoing gradual transition.
- In the last ten years we have moved from being a rich organization with excess funds for radical research, to a cost constrained organization whose research programs must be tightly focused to serve high priority needs.
- We must be aware of NASA and GSFC's needs and priorities.
 - Science Mission Directorate (SMD)
 - Exploration Systems Mission Directorate (ESMD)
 - Space Mission Operations Directorate (SMOD)



NASA FY06 Budget

- Science (SMD) \$ 5.5 B
 - Solar System \$ 1.9 B
 - Mars and Lunar Robotic Exploration
 - Universe \$1.5 B
 - JWST
 - Earth-Sun \$ 2 B
 - LWS
- Exploration (ESMD) \$ 3 B
 - CEV
- Shuttle \$ 4.5 B
- Station \$1.8 B





Climate Analysis for FY06

What's HOT

- High TRL, immediate need technology
- CEV
- Science, esp at GSFC – GSFC is a strongly science driven center
- Small Scale Distributed Science Systems, closer to the community, with value added domain specific services (ie. SeaWIFs)

What's NOT

- Low TRL, long term technology research –dearth of funding
- Shuttle & Station
- Technology that's not supported / endorsed / needed by C600
- Large Scale Centralized Science Systems (ie. ESDIS)



Climate Analysis for FY06

What's HOT

- LRO, RLEP II (Lander)
- JWST
- LISA
- Hubble Servicing – real funding, some robotic research
- MMS
- GPM - In-house build, GMSEC based ground system; 24x7 demand access
- APL – Griffin came from there – collaborator and competitor

What's NOT

- Large Constellations (ie. MagCon, Con-X)



Climate Analysis for FY06

What's HOT

- Comm & Nav – acknowledged GSFC role in Exploration
- ECANS / CCCI – GSFC leadership and participation
- GMSEC – Funded by SMD and ESMD
- Open architecture

What's NOT

- Closed architecture



Climate Analysis for FY06

What's HOT

- Technology spin-in
- GSFC! Most solid funding and work profile of any NASA Center. Just got better with RLEP II.

What's NOT

- Re-inventing the wheel; developing anything that Industry needs and will develop themselves
- MSFC and ARC, but the Administrator is saving them by balancing NASA work across Centers, so teaming with them is a good thing.



What's Cookin' for FY06

What GSFC is Promoting

- Space Weather
- Robotic Assembly and Maintenance (Dexterity)
- Exploration Avionics



FY06 Awards ISD from GSFC's Internal Investment Program IIP (IRAD, DDF, CC)

- IRAD Awards
 - Sensitive Skin – 588 Lumelski
 - Instrument cFE – 582 Cudmore
- CC Awards
 - Flight Data Management System – 582 Marquart
 - Infusion of Software, Static Analysis into FSW Development Processes – 582 Leucht
 - Support of additional 3.0 FTEs on proposals led by 540, 550, and 600.



IIP Lessons Learned

- Climatology
 - We did well before the cuts. Funding cut of 20% and then 15%.
 - Most funding went to Science and Sensors
 - Of 38 Information Systems CC proposals, 3 were selected
 - Of 12 Exploration Systems CC proposals, 1 was selected
 - Of 12 Robotics CC proposals, 2 were selected
 - CC has taken on an IRAD flavor
 - Bring business to the Center
 - Low TRL research was not funded
 - Needed clear work plan – milestones and deliverables
 - Cross cutting proposals were downgraded
 - Looked for technology uniquely needed by each investment area
 - Important to team with Science advocate



Upcoming Funding Opportunities

- ROSES 2006 Call
 - Expected 1/27
 - Will include ESTO's AISR
- SBIR
 - \$17 Million to GSFC every year
- New Agile Robotics Alliance Membership for GSFC (subsidized by NCDR / DOD)
 - 60 members, annual calls for proposals, \$30K - \$1M awards, average \$250K-\$350K
- Technology Spin-In
- DDF FY06
 - No reason not to write these proposals now
 - Opportunity for low TRL funding



Latest Exploration News

- RLEP II (Lander) Awarded to team of MSFC, GSFC, APL
- CEV CLV development requirements now directly drive the content of ESMD's R&T components.
 - Most technology efforts that had been funded by ESMD have been cancelled.
 - '06 moving \$785M from R&T to Constellation for CEV and CLV acceleration
- GSFC Task Assignments
 - Comm & Nav project management
 - RLEP I (LRO) project management
 - RLEP II (Lander) teamed with MSFC
 - Launch/Mission Systems: Support definition of multi-Center C&C systems and control software development
- Accelerated schedule
 - 2012-2014 Human to ISS
 - 2018-2020 Human to Moon for Week
 - 2022 Long Duration Human on Moon



On the Science Side

- Administrator Griffin has repeatedly said that he is committed to protecting the line between Exploration and Science so that the Science budgets are not impacted by the Exploration Initiative
- There are many technology challenges and needs within the Science Mission Directorate



Science Communications
Deputy Chief, PAO – *Donald Savage*

Sciences and Exploration Directorate

Director - *Vacant*

Deputy Director – *John Dalton*

Chief Scientist – *Vacant*

Assistant Director for Special Projects – *Dr. Nancy Maynard*

Assistant Director for Technology – *Dr. Azita Valinia*

Administrative Officer – *Diane Booth*

Operations Manager - *John Wolfgang*

Code 600

Associate Director for Science Engineering

Carolyn Krebs

Deputy – *TBD*

Code 601

University Programs Office

Chief – *Dr. Vigdor Teplitz*

Code 602

**Administration and Resources
Management Office**

Acting Chief – *Kelly Pecnick*

Code 603

Office of Science Utilization

Acting Chief – *Dr. Shahid Habib*

Code 604

Science Proposal Support Office

Chief – *Dr. James Green*

Code 605

**Computational & Information Sciences and
Technology Office**

Chief – *Dr. Richard Rood*

Deputy – *Nancy Laubenthal*

Code 606

Earth-Sun Exploration Division

Director – *Dr. Franco Einaudi*

Deputy – *Vacant*

Code 610

Exploration of the Universe Division

Director – *Dr. Nicholas White*

Deputy - *Vacant*

Associate – *Dr. William Oegerle*

Code 660

Solar System Exploration Division

Director – *Dr. Richard Vondrak*

Deputy – *Dr. Dorothy Zukor*

Deputy/Planetary Science – *Dr. David Smith*

Code 690